


| | | | | |
|--|--|--|-------------------------------|----------------------|
| INFORMATION DISCLOSURE CITATION PTO-1449 Sheet 1 of 1 | | | Complete If Known | |
| | | | Application Number | 10/060,109 |
| | | | Filing Date | January 28, 2002 |
| | | | First Named Inventor | Patel et al. |
| | | | Art Unit | 1746 |
| | | | Examiner Name | Delcotto, Gregory R. |
| | | | Attorney Docket Number | 60937-0129 |

| U.S. PATENT DOCUMENTS | | | | | | |
|-----------------------|--|--------------------------------|--|-------|----------|-------------------------------|
| Examiner Initials | Document Number Number - Kind Code ¹ | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Class | Subclass | Filing Date if Appropriate |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| FOREIGN PATENT DOCUMENTS | | | | | | | |
|--------------------------|---|--------------------------------|--|-------|----------|-------------|----|
| Examiner Initials | Foreign Patent Document Country Code ² - Number ³ - Kind Code ⁴ (if known) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Class | Subclass | Translation | |
| | | | | | | Yes | No |
| h0 | WO 01/27986 | 04/19/2001 | Gebrüder Decker GMBH & Co. KG | — | — | x | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS | |
|---|--|
| Examiner Initials | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published |
| | |
| | |
| | |
| | |
| | |

| | | | |
|---------------------------|---|------------------------|---------|
| Examiner Signature |  | Date Considered | 7/25/04 |
|---------------------------|---|------------------------|---------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ² Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁵ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

LIST OF REFERENCES CITED BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.

8317-0129-999

APPLICATION NO.

10/060,109

APPLICANT

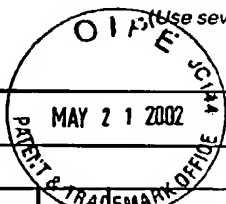
Patel et al.

FILING DATE

January 28, 2002

GROUP

1746



U.S. PATENT DOCUMENTS

| EXAMINER INITIAL | DOCUMENT NUMBER | DATE | NAME | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
|---------------------|-----------------|---------------|------------------|-------|----------|-------------------------------|
| AD | AA 3,592,773 | Jul. 13, 1971 | Muller | | | |
| AD | AB 4,395,479 | Jul. 13, 1983 | Ward et al. | | | |
| AD | AC 4,401,747 | Aug. 30, 1983 | Ward, Jr. et al. | | | |
| AD | AD 4,403,029 | Sep. 6, 1983 | Ward, Jr. et al. | | | |
| AD | AE 4,428,871 | Jan. 31, 1984 | Ward et al. | | | |
| AD | AF 4,508,591 | Apr. 2, 1985 | Bartlett et al. | | | |
| AD | AG 4,744,834 | May 17, 1988 | Haq | | | |
| AD | AH 4,770,713 | Sep. 13, 1988 | Ward | | | |
| AD | AI 4,781,764 | Nov. 1, 1998 | Leenaars | | | |
| AD | AJ 4,817,652 | Apr. 4, 1989 | Liu et al. | | | |
| AD | AK 5,129,955 | Jul. 14, 1992 | Tanaka | | | |
| AD | AL 5,181,985 | Jan. 26, 1993 | Lampert et al. | | | |
| AD | AM 5,334,332 | Aug. 2, 1994 | Lee | | | |
| AD | AN 5,560,857 | Oct. 1, 1996 | Sakon et al. | | | |
| AD | AO 5,563,119 | Oct. 10, 1996 | Ward | | | |
| AD | AP 5,571,337 | Nov. 5, 1996 | Mohindra et al. | | | |
| AD | AQ 5,571,447 | Nov. 5, 1996 | Ward et al. | | | |
| AD | AR 5,603,849 | Feb. 18, 1997 | Li | | | |
| AD | AS 5,630,904 | May 20, 1997 | Aoyama et al. | | | |
| AD | AT 5,645,737 | Jul. 8, 1997 | Robinson et al. | | | |
| AD | AU 5,672,577 | Sep. 6, 1995 | Lee | | | |
| AD | AV 5,705,089 | Jan. 6, 1998 | Sugihara et al. | | | |
| AD | AW 5,709,756 | Jan. 20, 1998 | Ward et al. | | | |
| AD | AX 5,792,274 | Aug. 11, 1998 | Tanabe et al. | | | |
| AD | AY 5,885,477 | Mar. 23, 1999 | Rasmussen et al. | | | |
| AD | AZ 5,972,862 | Oct. 26, 1999 | Torii et al. | | | |

RECEIVED

MAY 24 2002

TC 1700

EXAMINER

DATE CONSIDERED

7/25/04

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

LIST OF REFERENCES CITED BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.

8317-0129-999

APPLICATION NO.

10/060,109

APPLICANT

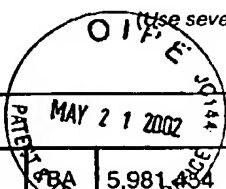
Patel et al.

FILING DATE

January 28, 2002

GROUP

1746



| | | | | | | | |
|----|----|--------------|---------------|---------------|--|--|--|
| AD | BA | 5,981,134 | Nov. 9, 1999 | Small | | | |
| AD | BB | 6,000,411 | Dec. 14, 1999 | Lee | | | |
| AD | BC | 6,048,406 | Apr. 11, 2000 | Misra et al. | | | |
| AD | BD | 6,090,217 | Jul. 18, 2000 | Kittle | | | |
| AD | BE | 6,117,783 | Sep. 12, 2000 | Small et al. | | | |
| AD | BF | 6,156,661 | Dec. 5, 2000 | Small | | | |
| AD | BG | 6,232,228 B1 | May 15, 2001 | Kwag et al. | | | |
| AD | BH | 6,235,693 B1 | May 22, 2001 | Cheng, et al. | | | |
| AD | BI | 6,248,704 B1 | Jun. 19, 2001 | Small et al. | | | |
| AD | BJ | 6,296,715 B1 | Oct. 2, 2001 | Kittle | | | |

RECEIVED

MAY 24 2002

TC 1700

FOREIGN PATENT DOCUMENTS

| | | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUBCLASS | TRANSLATION | |
|----|----|-----------------|---------------|-------------------------------------|-------|----------|-------------|----|
| | | | | | | | YES | NO |
| AD | BK | WO 98/36045 | Aug. 20, 1998 | PCT | — | — | | |
| AD | BL | WO 00/02238 | Jan. 13, 2000 | PCT | — | — | | |
| AD | BM | EP 0 662 705 B1 | Aug. 23, 2000 | EPO | — | — | | |
| AD | BN | 63-239820 | Oct. 5, 1988 | JAPAN (w/English language abstract) | — | — | | |

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

| | | |
|----|----|---|
| AD | BO | Baklanov, et al., "Applicability of HF Solutions for Contact Hole Cleaning on Top of TiSi ₂ ," Electrochemical Society Proceedings, Vol. 97-35, pp. 602-609 (1998) |
| AD | BP | Ireland, P.J., "High Aspect Ratio Contacts: A Review of the Current Tungsten Plug Process," <i>Thin Solid Films</i> , 304:1-12 (1997) |
| AD | BQ | Kittle et al., "Photoresist Residue Removal Using Aqueous foam Proof of Concept Experiments," Augafoam, Inc. and EKC Technology, Inc., http://www.aquafoam.com/removalall.html (accessed November 2, 2001). |
| AD | BR | Kittle, P., "Foam Wafer Cleaning Experimental Proof of Concept," Aquafoam, Inc., http://www.aquafoam.com/proof-11mb.html (accessed November 2, 2001). |
| AD | BS | Kujime, et al., "The Cleaning of Particles From Si Water Surface by Fluorine Solution Excited by Megasonic," Proceedings of the 1996 Semi. Pure Water and Chemicals, pp. 245-256 (1996) |

EXAMINER

DATE CONSIDERED

7/25/04

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

| | | |
|---|------------------|-----------------|
| LIST OF REFERENCES CITED BY APPLICANT (Use several sheets if necessary) | ATTY. DOCKET NO. | APPLICATION NO. |
| | 8317-0129-999 | 10/060,109 |
| | APPLICANT | |
| | Patel et al. | |
| | FILED DATE | GROUP |
| | January 28, 2002 | 1746 |

| | | |
|----|----|---|
| no | BT | Lee, C. and Lee, S., "Effects of Plasma Treatments On The Erosion Of TEOS-PBSG Films by Chemical Etchants," Solid State Electronics, Vol. 41(6): 921-923 (1997) |
| no | BU | Liehr and Kasi, "HF and UV-Ozone Integrated Wafer Preclean: Chemistry and Effects on Thermal Gate Oxide," Extended Abstracts of the 1991 International Conference on Solid State Devices and Materials, pp. 484-486 |
| no | BV | Ohman, L. and Sjöberg, S., "Equilibrium and Structural Studies of Silicon(IV) and Aluminum(III) in Aqueous Solution. Part 9. A Potentiometric Study of Mono- and Poly-nuclear Aluminum(III) Citrates," J. Chem. Soc. Dalton Trans., pp. 2513-2517 (1983). |
| no | BW | Råfols, et al., "Ionic Equilibria in Aqueous Organic Solvent Mixtures: The Equilibria of HF in an Ethanol + Water Mixture Used for Cleaning Up Semiconductors," J. Electroanalytical Chem. 433, pp. 77-83 (1997). |
| no | BX | Singer, P., "Wafer Cleaning: Making the Transition to Surface Engineering," Semi. International, pp. 88-92 (October 1995) |
| no | BY | Ueno et al., "Cleaning of CHF ₃ Plasma-Etched SiO ₂ /SiN/Cu Via Structures with Dilute Hydrofluoric Acid Solutions," J. Electrochem. Soc., vol. 144(7):2565-2572 (1997) |

RECEIVED

MAY 24 2002

TC 1700

| | |
|---|-------------------------|
| EXAMINER | DATE CONSIDERED 7/25/04 |
| *EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. | |

LIST OF REFERENCES CITED BY APPLICANT

(Use several sheets if necessary)

ATTY DOCKET NO.
8317-0129-999APPLICATION NO
10/060,109APPLICANT
PATEL, et al.FILING DATE
January 28, 2002GROUP
1746

U.S. PATENT DOCUMENTS

| *EXAMINER INITIAL | DOCUMENT NUMBER | DATE | NAME | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
|----------------------|-----------------|------|------|-------|----------|-------------------------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

FOREIGN PATENT DOCUMENTS

| | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUBCLASS | TRANSLATION | |
|-----------|-----------------|---|------------|-------|----------|-------------|----|
| | | | | | | YES | NO |
| <i>AD</i> | BZ | International Search Report from PCT/US02/03233 | 04/17/2003 | PCT | — | | |
| <i>20</i> | CA | WO 92/04942 | 04/02/1992 | PCT | — | | |
| <i>21</i> | CB | WO 01/27986 | 04/19/2001 | PCT | — | | |
| | | | | | | | |
| | | | | | | | |

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

| | | |
|--|--|--|
| | | |
| | | |
| | | |

EXAMINER

L. J. J. J.

DATE CONSIDERED

7/25/04

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

| | | |
|---|---------------------------|----------------|
| LIST OF REFERENCES CITED BY APPLICANT (Use several sheets if necessary) | ATTY DOCKET NO. | APPLICATION NO |
| | 8317-0129-999 | 10/060,109 |
| | APPLICANT Patel et al. | |
| | FILING DATE | GROUP |
| | January 28, 2002 | 1746 |



U.S. PATENT DOCUMENTS

| *EXAMINER INITIAL | | DOCUMENT NUMBER | DATE | NAME | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
|----------------------|----|-----------------|------------|----------------------|-------|----------|----------------------------------|
| AD | CC | 4,105,574 | 08-08-1978 | Culmone et al. | | | |
| AD | CD | 5,534,199 | 07-09-1996 | Winkler, III | | | |
| AD | CE | 5,915,193 | 06-22-1999 | Tong et al. | | | |
| AD | CF | 5,998,342 | 12-07-1999 | Scoville, Jr. et al. | | | |
| AD | CG | 6,235,693 B1 | 05-22-2001 | Cheng et al. | | | |

FOREIGN PATENT DOCUMENTS

| | | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUBCLASS | TRANSLATION | |
|----|----|---|------------|---------|-------|----------|-------------|----|
| | | | | | | | YES | NO |
| AD | CH | International Search Report from PCT/US02/03233 | 08-14-2003 | PCT | — | — | | |
| AD | CI | WO 90/15858 | 12-27-1990 | PCT | — | — | | |
| AD | CJ | WO 95/02033 | 01-19-1995 | PCT | — | — | | |
| AD | CK | WO 01/10961 A1 | 02-15-2001 | PCT | — | — | | |
| AD | CL | JP 53056203 | 05-22-1978 | Japan | — | — | X Abstract | |
| AD | CM | JP 08337793 | 12-24-1996 | Japan | — | — | X Abstract | |
| AD | CN | JP 2000267302 | 09-29-2000 | Japan | — | — | X Abstract | |

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

| | | |
|--|--|--|
| | | |
| | | |
| | | |

| | |
|---|-------------------------|
| EXAMINER <i>ADICTO</i> | DATE CONSIDERED 7/23/04 |
| *EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. | |